Local Work Instructions:
Noble Discoverer: Non-contact Cooling Water Discharge from Halliburton Cement Unit – D009

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SCOPE

This document offers work level instructions for the sampling, testing, and reporting of discharges associated with non-contact cooling water for the air compressor cooler and hydraulic unit while operating under the guidelines of the NPDES GP (AKG-28-8100), onboard the *Noble Discoverer*. The cement unit is cooled utilizing saltwater which passes through a heat exchanger and then is discharged to the receiving waters. Non-contact cooling water consists of seawater used to cool installed machinery such as the HVAC air conditioning units, cement units, compressors, generators, desalination units, rectifiers, and hydraulic equipment(rig brakes) located at various places on the *Noble Discoverer*. No biocides or chemicals will be added to this system. All of the HVAC units, cement units, compressors, rectifiers and hydraulic equipment discharge above seawater surface. All secondary cooling loops including the port generators, one re-circulation loop, and desalination units are sent through a Sea Suction Strainer/Colander installed underwater to prevent "sizeable" sea life from being affected by the discharge back to the ocean. No intermixing of fresh and salt water occurs between the primary and secondary loops.

In addition, independent digital flow meters along with temperature sensors have been installed on several discharge lines to monitor flow and temperature

RESPONSIBILITY

The M-I SWACO NPDES Compliance Specialist is responsible to ensure that this LWI has been provided to each person prior to conducting this task. Any personnel that may perform the tasks outlined in this document must be familiar with the process, before the rig begins operating under NPDES regulations.

During active drilling operations, the M-I SWACO NPDES Compliance Specialist is responsible for performing the following tasks on a daily basis for each of the non-contact cooling water discharges:

- Document the flow volume from the effluent flow meters.
- Perform and document visual sheen tests for each outfall.
- Temperature will be monitored continuously and documented.
- Document the quantity of any chemical used.
- Four times per well, at intervals designated to be representative of the discharge's toxicity, a sample will be collected for initial toxicity screening. Each sample will be collected at a time period selected to reflect discharge processes and operational processes. Collect and document initial toxicity screening samples in accordance with the procedures outlined in the QAPP.
- WET testing will be required if either of the following occurs: 1) Initial rapid toxicity screening threshold criteria are exceeded OR 2) discharge exceeds 10,000 gallons during any 24-hr period and chemicals are added to the system. If WET testing is required, collect and document three samples from the OWS effluent on an every-other-day basis. Package samples for transport to the fixed analytical laboratory.
- Collect and document samples for pH analysis.

1.0 References:

1.0 NPDES GP AKG-28-8100:

1.0.1 Table 10 – *Effluent Limitations and Monitoring Requirements for Non-contact Cooling Water (Discharge 009).*

1.1 Figure 1 – Discharge Points (Weston).

1.2 Noble Discoverer Best Management Practices Plan, April 2015.

1.3 Noble Discoverer Quality Assurance Project Plan, April 2015.

1.4 M-I SWACO Standard Operating Procedures: 1006, 3005, 2001, 3004, 2002, 2003, 2009, 2012, 2008, Section 2.4.3.

1.5 Shell Chemical Inventory and Additives Use Management.

1.6 Shell Exploration & Production Company Alaska Venture 2015 Noble Discoverer Waste Management Plan.

2.0 General Requirements:

2.0 The M-I SWACO NPDES Compliance Specialist is responsible for discharge sampling, testing, and reporting to the Shell Environmental Department while operating under NPDES GP AKG-28-8100.

2.1 The Shell Environmental Department is responsible for maintaining the Discharge Monitoring Report (netDMR) and submitting to EPA all discharges sampling, testing and results on a monthly basis.

2.2 Noble and Halliburton are responsible for operating and repairing all equipment associated with this discharge.

3.0 Safety Guidelines:

3.0 Before any operations can take place, all personnel involved in this process must complete the following details if required by operator or contractor:

3.0.1 The Pre-Tour Meeting is when daily activities are discussed.

3.0.2 Job Safety Analysis with all involved parties present.

3.0.3 Review Risk Assessment, if applicable.

3.0.4 Noble Permit to Work.

3.1 Appropriate personal protective equipment must be worn at all times

4.0 Discharge/Task Description:

4.0 Seawater is withdrawn through a sea chest located mid-ship on the starboard side and is used to cool the cement unit which is located on the port side, Main Deck. The effluent seawater is then discharged through a 4" line located on the port side mid ship, below the vessel's waterline.

4.1 Prior to being discharged, the effluent temperature is measured and logged hourly, by a fixed sensor.

4.2 An inline flow meter displays the velocity of flow in real time and is also stored on a data logger. The rate of flow can be viewed directly from the meter or collected from the data logger. In the event that a flow meter fails, estimates will be based on historical data. Total volume (gallons per day) discharged will be recorded on the NPDES Master Spreadsheet on a daily basis for netDMR reporting.

4.3 M-I SWACO NPDES Compliance Specialist will review the daily temperature data, and record the high and low temperatures on the NPDES Master Spreadsheet. In the event the temperature sensor fails, the M-I SWACO NPDES Compliance Specialist is responsible for sample collecting and manually measuring the temperature every six hours.

4.4 The M-I SWACO Compliance Specialist will conduct free oil testing using the visual sheen method and will be performed daily while operating under the NPDES GP. Tests are performed during daylight hours when receiving water can be seen. Visual observations will be recorded on the NPDES Master Spreadsheet.

4.5 The M-I SWACO NPDES Compliance Specialist will take required samples needed for analytical testing (Initial toxicity, pH, and WET) as described in section 5.0 below. A sample port is located directly on the cement unit and will be used for collecting required samples.

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4.6 The M-I SWACO NPDES Compliance Specialist will be record all results on the NPDES Master Spreadsheet and submit to the Shell Environmental Department.

4.7 The Shell Environmental Department is responsible for maintaining and submitting all data to EPA through the netDMR on a monthly basis.

4.8 The M-I SWACO NPDES Compliance Specialist will immediately report to Shell Environmental Department at 907-830-7435, of any upset condition.

5.0 Sampling Plan for Non-Contact cooling Water (D009):

Effluent Parameter	Effluent Limitations		Monitoring Requirements	
	Average Monthly Limit	Maximum Daily Limit	Sample Frequency	Sample Type
pH	Report (s.u.)		Monthly	Grab
Free oil	No discharge		Daily	Visual
Total Volume	Report (gal)		Daily	Flow Meter
Temperature	Report (°F)		Continuous	Measure
WET	Report (TU_c)		Use rapid toxicity test 4X/well as initial screen. WET not needed if initial passes.	Collect grab sample for analysis if results show potential toxicity or 1X/well if discharge >10,000 gal during 24 hr and if chemicals are added to the system.

6.0 Clean-Up:

6.0 Follow housekeeping procedures.

7.0 Contingency:

7.0 Notify rig personnel if any equipment isn't working properly.

Revision Log

Date:	Document History:	Revised/reviewed by:	Location: